Siting Report
for
Theater Missile Defense
Mid-Range Test Launch Complex
at
Ft. Wingate Depot Activity, NM

Based upon Site Survey
14-18 February 1994

Directorate of Civil Engineering
Test and Evaluation
Ballistic Missile Defense Organization

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Executive Summary

This study is provided to assess the capability of Ft. Wingate Depot Activity to act as a Ballistic Missile Defense Test Support Complex for the launch of target missiles toward White Sands Missile Range. The study does not recommend action, but it does identify a preferred launch area at Ft. Wingate should a decision to use the Depot as a launch complex take place.

The study preceeds decisions based upon the Extended Range Environmental Impact Statement due to the fact that Ft. Wingate Depot Activity has been closed. The installation was nominated for closure in the 1988 Base Realignment and Closure Act and the Army is in the process of releasing the land to other federal and local agencies. The Ballistic Missile Defense Organization has informed the Army that it has a continuing interest in some areas of Ft. Wingate and may have a potential future use of the site. This study supports the identification of 11,800 acres of Ft. Wingate Depot Activity for retention by the Department of Defense until a decision for future use can be made.

The survey team reviewed three sites on Ft. Wingate that were determined as acceptable for missile launch. The preferred site is located on high ground in bunker area "J" of the Depot (Bunker Area Site). Sufficient area is recommended to be retained around the launch area to provide a safety area and additional locations have been identified in areas "A" and "G" for radar and optics sites. An overview of these areas is provided in Annex I of this report. The two other areas that were under consideration were the "Hill Area Site," located south of the Bunker Area Site near Woodland Road No. 5, and the "Pershing Area Site", located at the old Pershing launch pad near Lake Mc Ferren.

Introduction

Development of the Theater Missile Defense (TMD) program requires live fire testing and intercept of live targets in the short-range (< 200 miles), mid-range (200-500 miles) and long-range (> 500 miles) arena. The existing over-land test ranges provide only the capability to test short-range scenarios. Various alternative locations are being considered to provide test opportunities at the other distances. These locations are addressed in the TMD Extended Range Environmental Impact Statement (EIS) and include Western Test Range, CA; Eglin Air Force Base, FL; White Sands Missile Range, NM; and Kwajalein/Wake Island Pacific range. A decision on which combination of ranges to be used will be issued in late FY 94 after the results of the Extended Range EIS have been published.

The alternatives at the White Sands Missile Range that provide mid- and long-range testing involve target launches from Ft. Wingate, NM and Green River, UT, and interception over the White Sands Missile Range. These concepts are depicted in Figure 1.1.

Ft. Wingate Depot Activity was placed on the base closure list by the 1988 Base Realignment and Closure Commission. The installation has been shut down and is now in caretaker status. The Army is rapidly moving to dispose of the entire property. Underlying authority in 40 U.S. Code 483 and 484 anticipates determination of other Department of Defense needs for property at closing bases before making the property available for use by other federal agencies or local communities. The FY 94 Defense Authorization Act, Sec. 2904, requires that for locations like Ft. Wingate, the screening process within DoD and the Federal government be completed by 30 May 1994.

As a Defense Agency, the Ballistic Missile Defense Organization (BMDO) may not hold real property. However, BMDO wrote the Department of the Army that it is interested in at least a part of the Ft. Wingate property, and that there are potential mission requirements for the real property. In the event that the property is to be retained, BMDO would ask one of the services to act as its real estate agent and retain jurisdiction of those portions of Ft. Wingate that are required for mission activity. See Annex H for a detailed diagram of the proposed area.

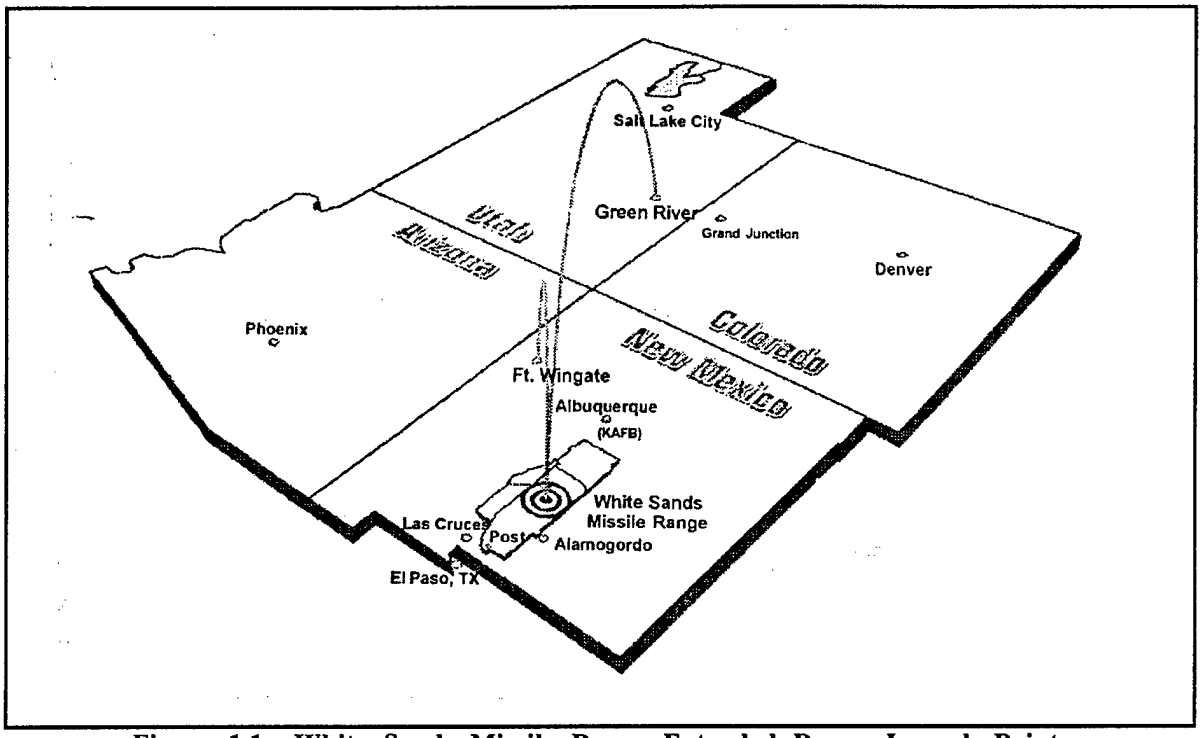

Figure 1.1 White Sands Missile Range Extended Range Launch Points

Purpose

A determination on which range or ranges to utilize for TMD mid- and long-range testing will not be made until after the completion of the Extended Range EIS. That decision will not take place before the 30 May deadline for screening of property at Ft. Wingate. Therefore, in order to keep Ft. Wingate available as an alternative, it is necessary to request that the Army retain an area of the installation large enough to accomodate BMDO's target launch requirements.

The intent of this survey is to determine if a site meeting the criteria of a generic BMDO launch complex plan can be identified on Ft. Wingate. If more than one site meets the criteria, the alternatives are to be compared and a preferred site selected. Therefore, the purpose of the study is to determine whether or not a target launch complex can be sited on the installation, and if so, how much of the installation should be retained and maintained by an executing agent for potential future Ballistic Missile Defense test launch operations.

It is important to note that this study is limited in scope. It does not address the decision process that selected Ft. Wingate as a launch location, nor the

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Based on the collection of criteria from these launch programs, a generic launch complex was developed to identify the necessary elements to perform the launch operations. Figures 1.2 and 1.3 depict this generic launch complex. Capability is provided for launch of up to two missiles at once. Critical elements include the following: 1) two launch pads separated by at least 1250', 2) a blockhouse outside the 1250' circles, 3) a dual bay missile buildup facility with its own 1250' safety zone, 4) locations for radar pads providing direct line of site to the launch points, 5) a helicopter landing area, and 6) paved access roads throughout the site suitable for transport of missiles and their components.

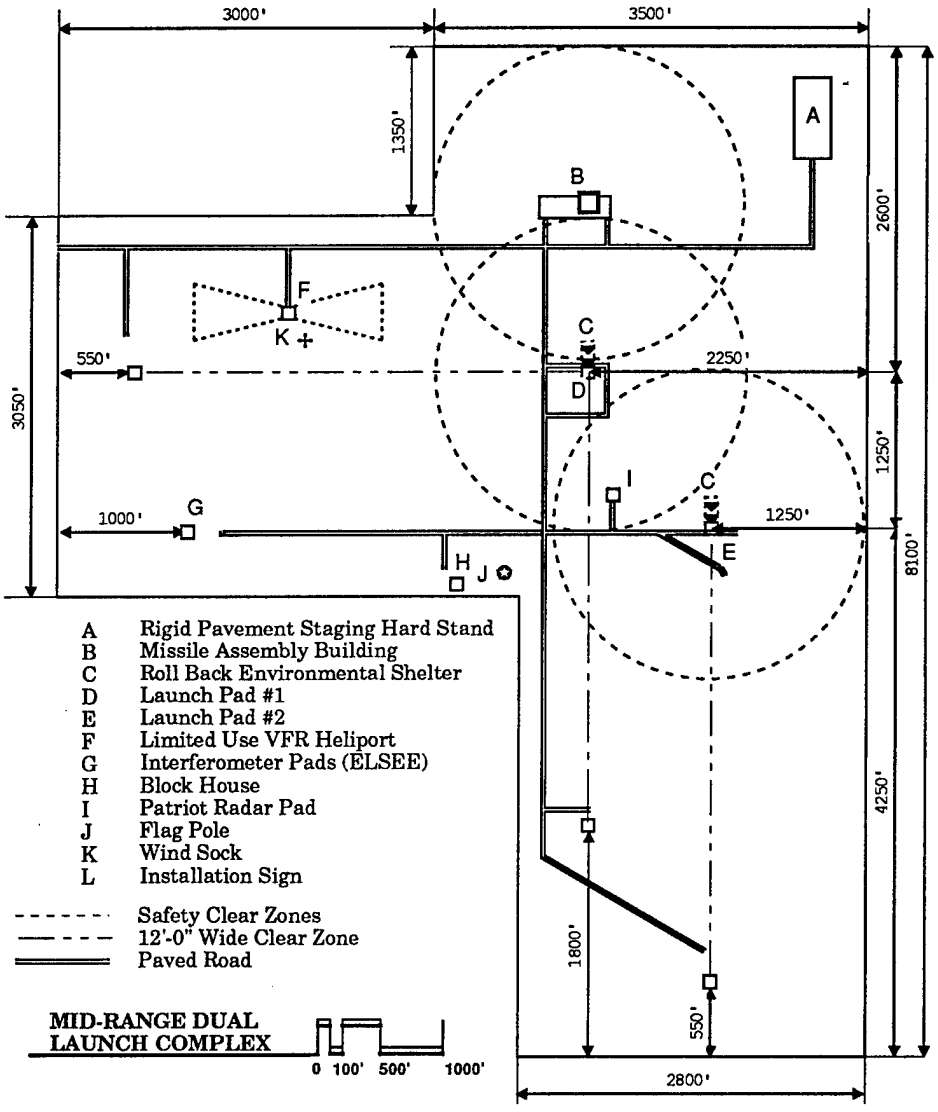


Figure 1.3 Generic Dual Launch Complex

The survey team established a set of exclusionary and evaluative criteria as a baseline to:

- Narrow the launch complex to a number of potential sites;
- Evaluate the sites against one another, and;
- Choose a preferred candidate.

The initial step involved map studies of the installation and the surrounding community. Sites were chosen based upon topographical features, assumed lines of sight and distances from known public and private buildings, roads, and recreation facilities. Based upon the map studies, the team identified three potential sites as meeting the minimum physical characteristics for a launch site.

The site characteristics were rated and placed into categories of high, medium, or low priority, and the priorities were then assigned a value of 10, 20 or 30. The characteristics were further weighted based upon the expected impact of each characteristic on launch operations.

During the site visit, each of the potential sites was evaluated in terms of the established characteristics. Sites that best met each characteristic were given more points. Once all of the sites had been rated, the priority weighting was applied to the raw scores. The site with the highest weighted score became the preferred launch location.

The exclusionary and evaluative criteria developed for the Ft. Wingate siting study are provided in Annex A and B respectively.

Survey Results

The siting team verified the adequacy of three potential sites (See Figure 1.4) identified during the map study. They visited each site and plotted the sites in relation to common reference points using global positions system (GPS) equipment. They marked launch points and authenticated lines of sight to radar and telemetry points. Routes of travel, available facilities, and the area within the launch hazard area were checked in detail. The generic launch complex plan was site-adapted for each of the three candidate sites. These field plans are provided in Annex E for reference.

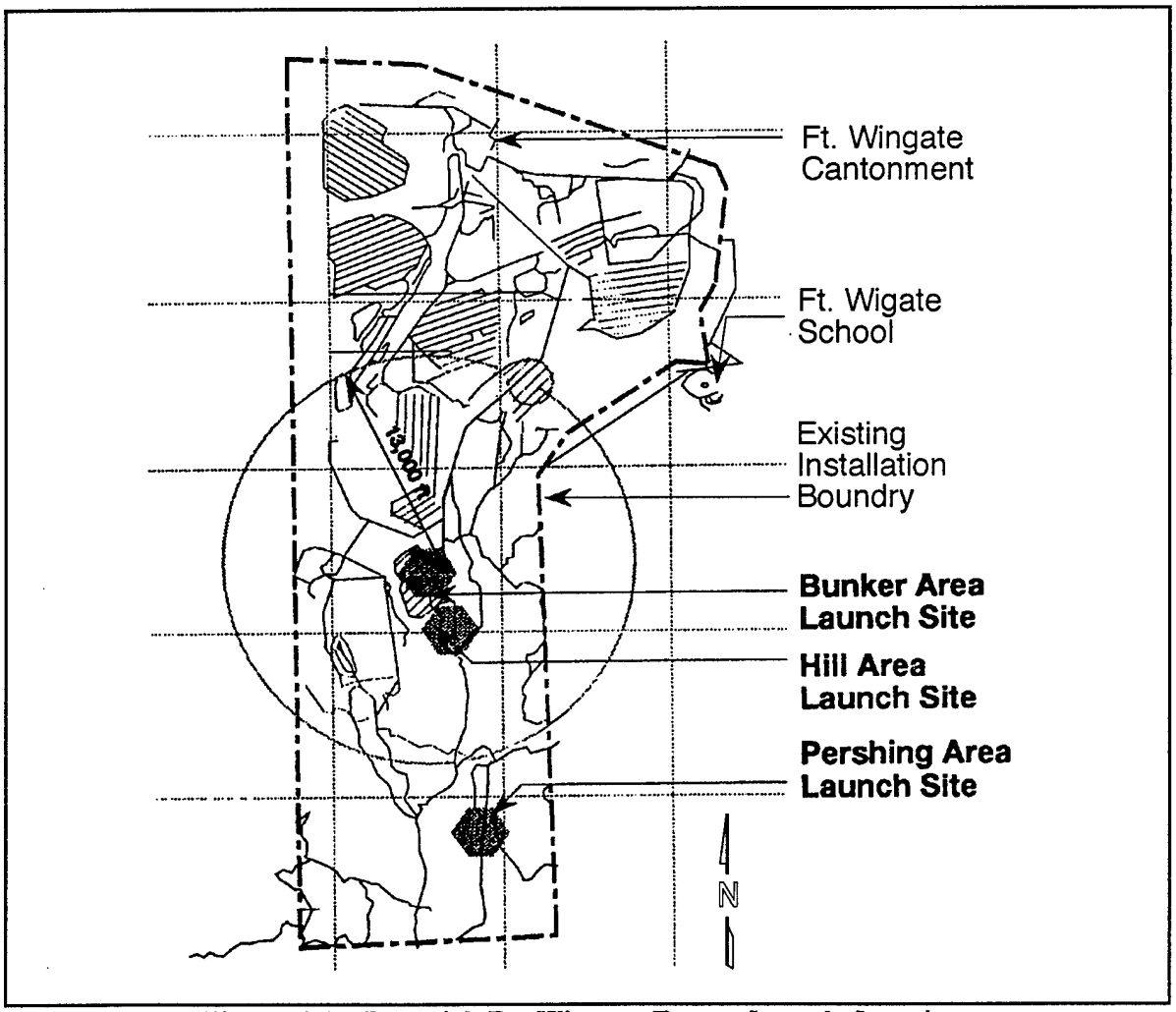


Figure 1.4 Potential Ft. Wingate Target Launch Locations

SITE ONE, known as the "Bunker Area Site", is located in what was the "B" area of Ft. Wingate. It utilizes the paved area in front of old munition bunkers on high ground overlooking much of the Ft. Wingate site. Two launch pads separated by 1250' can be located in a single row of bunkers. Radar/Optics sites are located in the valley below within clear lines of sight.

SITE TWO was called the "Hill Area." It is located on the highest point above the "Bunker Area Site", and although there are trees to clear, it provides adequate lines of sight to the same radar/optics sites.

SITE THREE is known as the old "Pershing Area." This site was actually used to launch Pershing missiles during the 1960s. The site is located within a wooded area near a lake and not far from the highest ground on the Ft. Wingate installation. A line of sight to the valley is not possible because of the dense forest growth; however, radar and telemetry sites from the Pershing launches are still serviceable.

EVALUATIVE CRITERIA

Eval #	Characteristic	Overall Score		
		Bunker Area	Hill Area	Pershing Area
11	Remote site	2.1	1.75	1.4
12	Obscure visibility of launch site	0	0	0.2
13	Water supply	0.6	0.6	0.3
14	Existing fence	0	0	0.15
15	Site access roads	0.8	0.6	0.8
16	Road from MAB to launch pad	0.3	0.3	0
17	MAB capability	0	0	0
18	Remote instrumentation areas	0.7	0.7	1.05
19	Existing hardstands for trailers	0.05	0	0
20	Minimize cutting wooded areas	0.3	0.15	0
21	Helicopter pad area	0.6	0.6	0.3
22	Right of way for communication	2.1	2.1	2.1
23	Fence Intrusion Detection System	0	0	0
24	Prime power availability	0	0	0
25	Local community support	0.4	0.4	0.4
26	Compatible use zones	1.5	1.5	1.5
27	Minimize impact on redevelopment	1.25	1.5	1.5
28	Mimimize impact to public roads/rail	2.1	2.1	2.1
29	Ability to evacuate hazard area	1.5	1.8	1.8
30	Impact to archeological/historical	2.1	1.75	1.05
31	Impact to national monuments	1.5	1.5	1.5
32	Minimize impact to local community	1.5	1.5	0.75
33	Known hazardous mat/site clean up	1.75	2.1	2.1
	Total	**21.15**	**20.95**	**19.00**

Table 1

Conclusion

Although all three of the sites would satisfy the physical requirements for a missile launch facility, SITE ONE known as the "Bunker Area Site," is the most preferred location for the missile complex. As shown in table 1, it is remote from the public, has the best access of any of the sites considered, and construction would involve the least amount of tree cutting and clearing. Dual launch pads could be constructed on existing hardstand surfaces thus minimizing construction costs. The "Bunker Area Site" also provides the least impact upon the adjacent national forest and its associated recreational activities allows maximum flexibility for future use of these areas.

The proposed use of the "Bunker Area Site" for a launch complex requires the retention of approximately 11,800 acres of the Ft. Wingate site. The majority of these acres surround the actual launch pads to provide a more controllable area for launch safety. In addition, smaller sites are required in the "A" area and "G" area for radar and optic installations. A Real Property Requirements Site Map based upon the proposed option is provided as Annex I.

#	Criteria Description	Type	Rationale	Unit of Measure
1	Restricted Air Space corridors to WSMR intercept point obtainable	Mission	Must be allowed to launch target towards WSMR.	Yes/No
2	Launch site within mid-range intercept distance criteria (300-400 km)	Mission	Must meet Theater Mid-Range Scenarios	Yes/No
3	Azimuth Vectors from WSMR intercept location to launch site must be between 135-225 degrees and 315-45 degrees	Mission	Must maintain intercept debris pattern within WSMR	Yes/No
4	Launch site must be within U.S. controlled territory	Mission	Eliminate treaty and country-to-country legal disputes.	Yes/No
5	DoD controlled real estate with a radius of 3.0 miles around the launch platform.	Mission	Minimum acceptable launch hazard area for safety and mission risk.	Yes/No
6	Booster Drop Zone must be capable of being fully evacuated at time of launch. Two drop Zones are required, one at 35.5 km (22 miles) and one at 80 - 130 km (50-80 miles) from launch site with each Booster Drop Zone being 20x20 km (12x12 miles)	Mission	Safety/Security	Yes/No
7	Real Estate requirements to support facilities to include a block house, a missile assembly building (2 bay) with a 381 m (1250 foot) inhabited building quantity distance zone (QD), and two launch pads each with a 381 m (1250 ft) inhabited building QD zone	Mission	Sufficient land area to site mission facilities and contain adequate safety zones must be available to support mission.	Yes/No
8	A remote radar, telemetry and optical instrumentation site obtainable to meet mission needs, 4.8 - 8 km (3-5 miles) from launch site. Generally 90 degrees $\pm$ 40 degrees off centerline of flight path. A clear line of site from either radar mentioned in this item or item number 9 to the launch pad must be obtainable.	Range	Needed to provide range instrumentation.	Yes/No

#	Criteria Description	Type	Rationale	Unit of Measure
9	A remote radar and ops instrumentation site obtainable to meet mission needs, 4.8 - 8 km (3-5 miles) from launch site. Generally 180 degrees ± 40 degrees off centerline of flight path. A clear line of site from either radar mentioned in this item or item number 8 to the launch pad must be obtainable.	Range	Needed to provide range instrumentation.	Yes/No
10	At launch area, obtainable real estate to install the Interferometer (ELSSE) in-line perpendicular to flight path and 1128 m (3700 ft) down range. Must be able to obtain clear line of site to launch pad.	Range	Required in-line of site installation for mission controls	Yes/No

#	Criteria	Type	Rationale	Unit of Measure	Weight
11	Remote site	Safety & Security	Increase safety and security	Distance from populated area	H+ 30
12	Obscure visibility of launch site	Safety & Security	Increase security	Qualitative	L 10
13	Water supply	Safety & Security	Water required to provide fire protection.	Qualitative	M 20
14	Existing site fencing	Safety & Security	Minimize construction cost	Qualitative	L+ 10
15	Site access roads are at least semi-improved. Horizontal curves and radii should be maximized to meet launch erector vehicle turning characteristics.	Safety & Security	Minimize construction cost	Qualitative	M+ 20
16	Road from MAB to launch pad must be fully improved road surface	Safety & Security	Minimize construction cost	Qualitative	L+ 10
17	Missile Assembly Building must have drive through capability	Range	Safety and cost	Qualitative	L+ 10
18	Areas of 1.3 sq km (0.5 sq mi) for each remote instrumentation area that are relatively clear of structures, trees, and other obstructions.	Range	Minimize construction cost to clear areas	Qualitative	H+ 30
19	Existing hardstands for administrative trailers	Range	Minimize construction cost	Qualitative	L- 10
20	Minimize cutting wooded areas	Range	Minimize construction cost and environmental impact	Qualitative	M 20
21	Real Estate available to provide Limited Use, VFR, Helicopter pad	Range	Safety	Qualitative	M 20
22	Accommodate right-of-way for land lines (fiber optics) hook up to commercial and interconnections between blockhouse, launch pads and remote radars year round.	Base Operations and Support	Availability of communications or real property to use microwave communications	Qualitative	H+ 30

#	Criteria	Type	Rationale	Unit of Measure	Weight
23	Fence intrusion detection system remoted to local police	Base Operations and Support	Security	Qualitative	L- 10
24	Prime power available to launch pad and support facilities	Base Operations and Support	Commercial power nice to have, but not mandadory.	Qualitative	M+ 20
25	Local community is able to support TDY personnel (100 personnel)	Base Operations and Support	Closer to launch site is better	Qualitative	M- 20
26	Launch Site located in Compatible Use Zones	Community Impact and Integration	Minimize zoning restrictions	Qualitative	H- 30
27	Minimize impact to Public Sector for redevelopment of balance of Ft. Wingate	Community Impact and Integration	Minimize local opposition	Qualitative	H- 30
28	Minimize impact to major public roads	Community Impact and Integration	Minimize	Qualitative	H+ 30
29	Ability to evacuate Hazard Areas	Community Impact and Integration	Reduce program cost	Qualitative	H 30
30	Minimize impact to known archeological or historical sites, endangered species	Community Impact and Integration	Environmental considerations	Qualitative	H+ 30
31	Minimize impact to National Monuments	Community Impact and Integration	Environmental compliance	Qualitative	H- 30

#	Criteria	Type	Rationale	Unit of Measure	Weight
32	Minimize impact to local community, wildlife and plant life	Community Impact and Integration	Environmental considerations	Qualitative	H- 30
33	Known hazardous material or potential for hazardous clean up required at site	Community Impact and Integration	Minimize initial and operational costs of program	Qualitative	H+ 30

Detailed Results Matrix

ANNEX C

Ft. Wingate
Launch Complex Siting Criteria Matrix

Eval #	Characteistic	Priority	Max Pts	Weight		Raw Scores		Weighted Scores		
					Bunker Area	Hill Area	Pershing Site	Bunker Area	Hill Area	Pershing Site
11	Remote Site	H+	30	0.07	30	25	20	2.1	1.75	1.4
12	Obscure Visibility of launch site	L	10	0.02	0	0	10	0	0	0.2
13	Water Supply	M	20	0.03	20	20	10	0.6	0.6	0.3
14	Existing Fencing	L+	10	0.03	0	0	5	0	0	0.15
15	Site Access Roads	M+	20	0.04	20	15	20	0.8	0.6	0.8
16	Road from MAB to launch pad	L+	10	0.03	10	10	0	0.3	0.3	0
17	MAB capability	L+	10	0.03	0	0	0	0	0	0
18	Remote instrumentation areas	H+	30	0.07	10	10	15	0.7	0.7	1.05
19	Existing hardstands for trailers	L-	10	0.01	5	0	0	0.05	0	0
20	Minimize cutting wooded areas	M	20	0.03	10	5	0	0.3	0.15	0
21	Helicopter pad area	M	20	0.03	20	20	10	0.6	0.6	0.3
22	Right of way for communications	H+	30	0.07	30	30	30	2.1	2.1	2.1
23	Fence Intrusion Detection System	L-	10	0.01	0	0	0	0	0	0
24	Prime power availability	M+	20	0.04	0	0	0	0	0	0
25	Local community support	M-	20	0.02	20	20	20	0.4	0.4	0.4
26	Compatible Use Zones	H-	30	0.05	30	30	30	1.5	1.5	1.5
27	Minimize impact to redevelopment	H-	30	0.05	25	30	30	1.25	1.5	1.5
28	Minimize impact to public roads/rail	H+	30	0.07	30	30	30	2.1	2.1	2.1
29	Ability to evacuate hazard area	H	30	0.06	25	30	30	1.5	1.8	1.8
30	Minimize impact to archeological/historical	H+	30	0.07	30	25	15	2.1	1.75	1.05
31	Minimize impact to National Monuments	H-	30	0.05	30	30	30	1.5	1.5	1.5
32	Minimize impact to local community	H-	30	0.05	30	30	15	1.5	1.5	0.75
33	Known hazardous mat/site clean up	H+	30	0.07	25	30	30	1.75	2.1	2.1
	Total			1				21.15	20.95	19

Comparison of Sites
(Field Notes)

Meteorological Support

All three sites were visited and reviewed in terms of supporting launch operations with meteorological instrumentation. None of the sites offered any exceptional challenges and the three sites were rated equal. One concern is the location of a 32-meter tower; but overall, this is a flexible requirement that can work at any of the three sites.

Communications

Bunker Area Site:

- Easy access to commercial long-haul carrier (i.e., US West).

Hill Area Site:

- Line of sight to all instrumentation sites if microwave communications is needed and cable or fiber may not be buried.
- Very few if any towers would have to be erected for microwave towers.
- Prime power is available at main control area.
- Easy access to all sites (most roads paved).
- If we microwave back to WSMR, this would add at least one or two shots.
- Equipment must be purchased in any case, and only a site selection by project personnel will tell how much must be purchased.
- Upgrade to site at Lamaska-Mt. Taylor will be needed if microwave is used to get to WSMR.
- Land must be procured on high ground to get line of site to Lamaska & Mt. Taylor

Pershing Area:

- There is no prime power
- There are no commercial communications close to Pershing site. If site is used and we microwave back to WSMR we have no way (without high costs) to get local phones.
- All Sites will more than likely need microwave towers connected to all instrumentation sites (APP 100' HT). This would be a microwave nightmare. More personnel would be required to man sites.

- Launch Control would need power and trailers at each site to service microwave and line treatment equipment.
- Access to instrumentation site would take longer in the event servicing was required.
- Distances are too great to economically use cable between sites.
- Fewer microwave shots would be needed to reach WSMR.
- Upgrade to Mt. Taylor and Lamaska is needed for microwave shot to WSMR. Many unanswered items remain, such as whether cable can be buried, if it is cost effective to use microwave vs. commercial carrier, if Launch Control is able to get line of site between instrumentation sites. Profiles must be done to insure line of site and height of towers.

OPTICS REPORT

Optics requirement at launch site:
- Optic needs to have line of sight to launcher
- Line of sight distance required is a minimum of 300 ft. from the sides and rear of launcher.
- Need to have line of sight of launcher from telescope.

Bunker Area Site:
- This location appears to be the best area from an optics standpoint. With little work at launch area, optics would have good line of sight from all cameras.

Hill Area Site:
- This location looked like it would meet optic requirments if launcher was located to give optic 300 ft at the sides and in the rear of launcher.
- From the telescope site locations at this time I am not 100% sure of good line of sight but believe this location will work.

Pershing Area Site:
- Optic fix camera in this location will work. Telescope sites for this location are not good. There is no line of sight from this location and the small open area of the sky would result in a very small segment of coverage.

Radar Coverage

Fort Wingate Launch Options, with respect to radar coverage.
Bunker Area Site: Launchers at J1641 and J1647
Hill Area Site: Launchers on ridge south and above J1641 and J1647
Pershing Area Site: Launchers at McFerren Lake

Radar Sites:

Bunker Area: Intersection by igloo A 1000 (for single missile)

- Intersection by igloo A 994 (for dual missile)
- Intersection by igloo G 1414 (for single missile)
- Intersection by igloo G 1406 (for dual missile)

Hill Area: Same as Bunker Area site

The Bunker and Hill areas can easily be done. There is a clear line of sight from the radars to the missiles. Only G1406 might require the topping of any trees (2 or 3). Radars will be located on the paved roads as will the boresight towers (BST). Some build up is required at G1414 and G1406 to level the radar because the roadway slopes slightly downhill, (minimal work). Roads to A1000 and A994 are paved, with no known bridges to cross other than main entrance to post area. Access to G1414 and G1406 will require a bridge near the base of G complex or an entrance provided off State Road 400.

Pershing Area: ELVA site (two radars for dual missiles)

Ranger site: (two radars for dual missiles)

At the Pershing Area site, ELVA site should be able to see the transponder once the missile is erect. The road into the site will need upgrading; about 1400 feet will require room for two radars located near ridge. Road to BST will need upgrading about 1500 feet beyond northern-most radar. BST will need some site preparation such as possible tree removal and tree topping at ELVA and McFerren Lake. Range site (35° 27', 108° 32' 45") radars are not expected to see the transponder until missile rises above the trees. Major road work will be required to access Ranger Site and the BST locations. About 10 trees must be removed for each radar (two), and trees must be removed for the BST in addition to the access road and BST roads already mentioned. Some trees will also require topping.

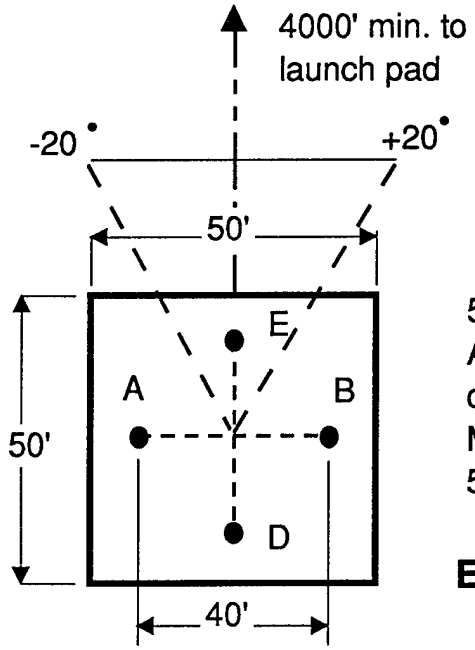
Preference: To support from the area A and area G sites. (A and G refer to bunker areas on the Ft. Wingate Installation. Bunkers designations in these areas are prefixed with the area letter.)

ELSSE

Bunker Area

ELSSE-X :

- 50x50 level area to install telephone poles such that the height above ground yields a line-of-sight to the launcher(s).
- Clear trees 200 feet in front at the antenna field C between the antenna field and launcher(s).



50' x 50' level area
Antennas A,B,E,D
on telephone poles.
Minimum height is
5 feet.

ELSSE - X FIELD

ELSSE-Y Requirements:

- 50x50 level area to install telephone poles such that the heights above ground yields a line-of-sight to the launcher(s).
- Clear trees 200 feet in front at the antenna field C between the antenna field and launcher(s).
- Construct road to access antenna field.
- Locate an area 300 feet from the antenna field to locate support van.

Telemetry Requirements:

- TTAS and TMV to be located on flat area at Rusty Nail Ridge (Range Control).
  Possible Problem: Antenna pattern may require system relocation to Area G/ Area A. Areas G and A are already flat; no construction required.

Hill Area Site:

ELSSE-X Requirements:

- Line-of-sight 4000 feet behind the launcher(s), (the areas for Option 1 can be used).

ELSSE-Y Requirements:

- Line-of-sight 4000 feet west of the launcher(s). The area for Option 1 is too far "behind" the launcher(s) and should be relocated "in-line" west of the launcher(s). The area should be similar to Option 1.

Telemetry Requirements:

- TTAS and TMV can use the same areas mentioned for Option 1.

Pershing Launcher Area:

ELLSE-X requirements:

- Line-of-sight 4000 feet behind the launcher(s). The area layout is similar to the Bunker Area Site.
  Possible Problems:

  1) If the telephone poles for the antennas are greater than ten feet above the ground, the telephone poles will need some type of stabilization.
  2) Site requires clearing more trees than the Bunker or Hill Area sites.

Ellse-Y Requirements:

- Site layout similar to Option 1.
- Line-of-sight and possible problems similar to ELSSE-X above.

Telemetry Requirements:

- Line-of-sight from Turkey Ridge to the missile, especially when the missile is in the horizontal position.
  Possible Problem: Antenna pattern may cause system to be relocated

Preference: ELSSE - Option 1
TELEMETRY - Option 1

Civil Engineering

Bunker Area Site:

Advantages	Disadvantages
The site is in a previously disturbed area that was used for ammunition storage igloos. Because of the previous land use, it is unlikely that there is an environmental or archeological problem for the main area. Roads provide good all-weather access. Approximately 6,500 feet of road improvement is required except for the west ELSEE area, where existing trails must be improved for all-weather access. Existing road right-of-ways provide a route for electrical and utility service.	The west ELSEE is along the border of the open burning pit. The site must be investigated to ensure there is not an environmental problem. Several existing bunkers may have to be demolished to provide for construction and line of sight.

Hill Area Site

Advantages	Disadvantages
No demolition anticipated.	Approximately 10,500 feet of road upgrade and construction of 3,800 feet of new roads will be required to support the construction of the launch pads in a previously undisturbed area. Since the launch pad areas are sited in the undisturbed areas, extensive tree cutting will be required with the typical environmental concerns. Required archeological investigations will delay the start of construction. Use of this area may not be included in the EIS, which will also require additional survey. Considerable earthwork with the need for on-site borrow for roads, and the leveling of areas will be required. Utility runs will be longer.

Pershing Area Site

Advantages	Disadvantages
The site is in an isolated area away from public view.	Approximately 21,000 feet of improved access roads will be required, along with 10,000 feet of totally new road in virgin areas. Extensive tree cutting and trimming will be required. Extensive earthwork will be required. The launch sites are adjacent to a potential recreation area. Line of sight is questionable for all observation points because of rolling terrain and tree cover. Sites are far from any utility services, and from major roads. Will require longer construction period to complete work, greater travel distance for construction crews and materials. This will be the most expensive option.

NOTES ON LAUNCH SITE CRITERIA

-Based on STARS safety zone of 13,000 ft; prudent to maintain as much of hazard area as possible. Control development within 13,000 ft of launch area.

-Launch sites: Option 1 - in center of property
Establish Boundary Fences
Upgrade Roads
Provide commercial power to L.C. overhead through right-of-way

-Commo requirement for use of one igloo at each site - launch, radar (2)

-Pad and power at gate in y.

-Rusty Nail Ridge - 50' x 150' concrete pad + 150' x 300' (chain link) concrete pad

-Radar, range control, optics layout for outlying sites.

STEWS-NRO-DA-L 11 FEBRUARY 1994

Memorandum for record

Subject: Engineering Requirements for meteorological support at Ft. Wingate, NM

1. Support will include observations from a 32 meter tower and upper air observations using a mobile 24 foot trailer equipped with vaisala upper air equipment and area for balloon inflation.

a. Installation of a 32 meter high tower requires a one meter by one meter by 4" thick concrete slab. Deadman anchors must be installed at 30 meters, 15 meters and 8 meters out from the center of the concrete slab in a triangular pattern; the same anchors that are used for power-line poles will be acceptable.

b. A 4-conductor data line from the 32 meter tower to the block house or fire control is needed for support of a 9600 Baud ASCII Transfer.

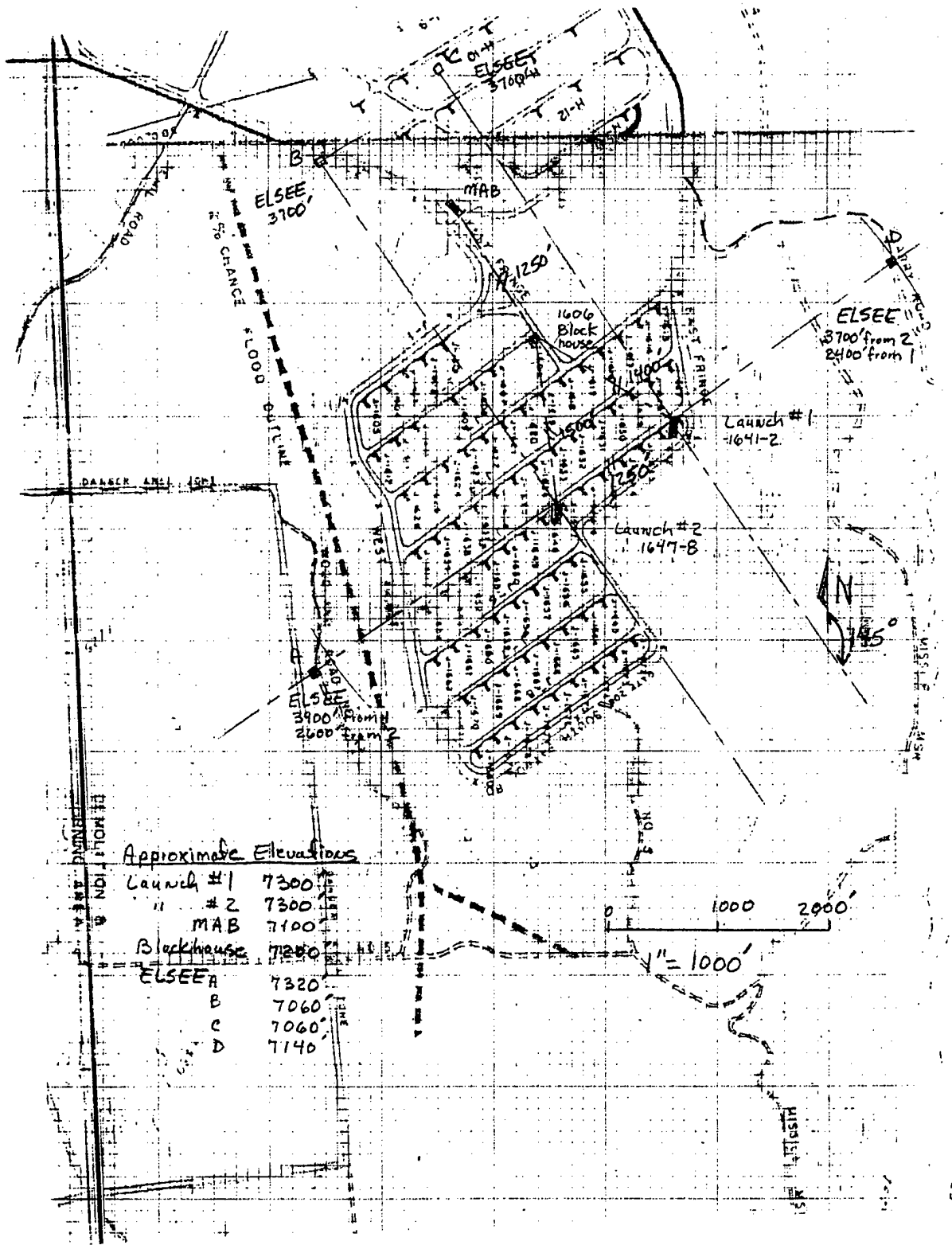
c. The mobile upper air trailer will require a standard 220 volt hookup (the same type used at MLRS Launch site on WSMR). The area must be clear for approximately 100 feet around the van to allow balloon launches.

d. A phone line to the van will be required for a telephone modem. This will be used to transmit the upper air data to the missile flight safety and project offices.

2. The approximate set-up time required for the tower installation is one to two weeks. The set up time for the upper air trailer is 3-5 days. These times do not include travel time to Ft. Wingate.

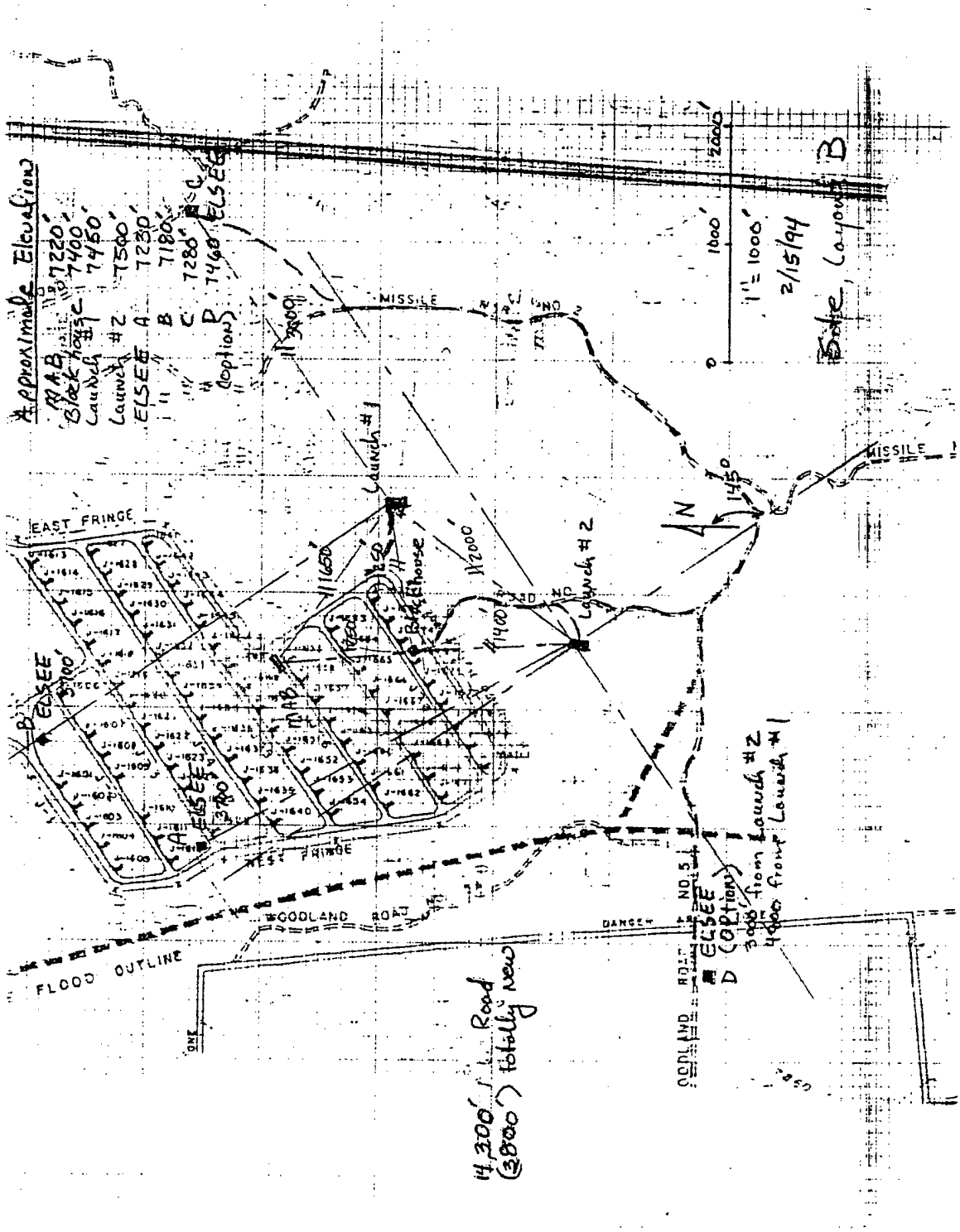
Launch Site Layouts (Field Drawings)

ANNEX F



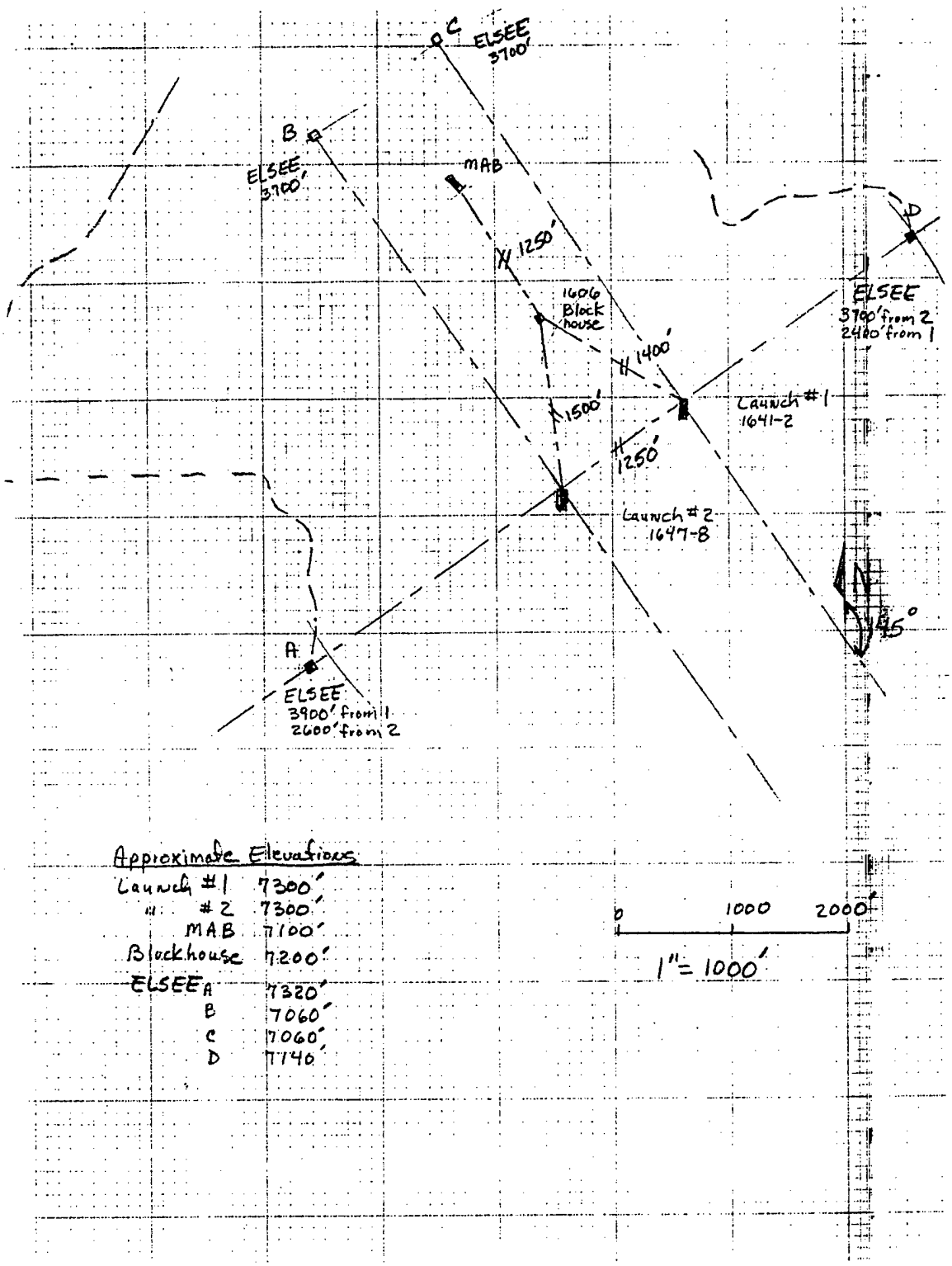
"Bunker Area Site"

ANNEX F



"Hill Area Site"

ANNEX F



"Pershing Area Site"

ANNEX F

Ft. Wingate Launch Safety Study

ANNEX G

SITE SURVEY - FT. WINGATE

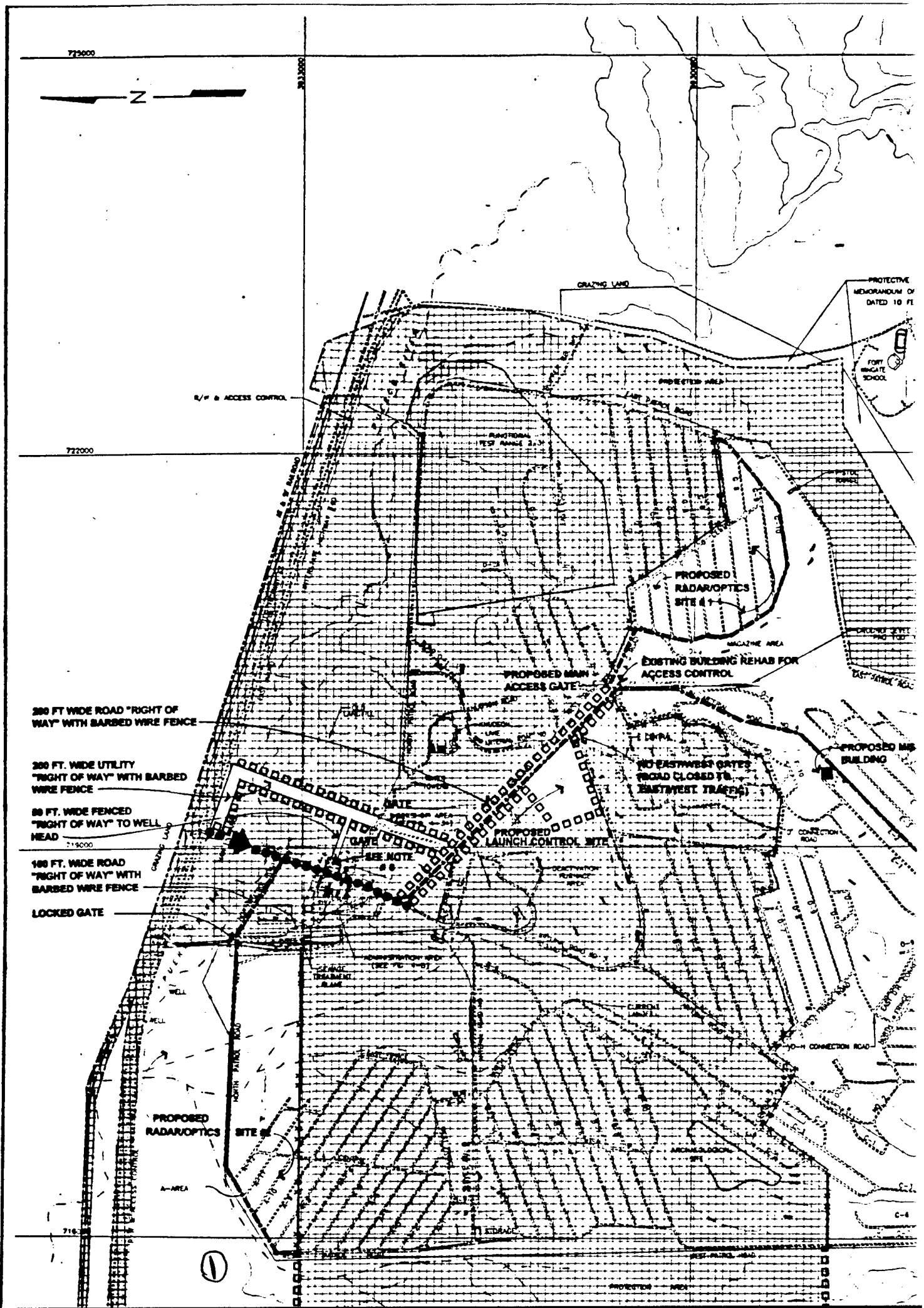
NAME	OFFICE	PHONE	SPECIALTY
Paige Johnson	BMDO/AQT	703-693-1744	
Mike Krzykowski	THG	703-787-3750	
Richard O. Martinez	WSMR, MTD-MA	505-678-1047	HERA PE
Larry Misquez	WSMR, NDO-DA	505-679-9142	MET SPT
Patrick Hockman	WSMR, NR-DO-P	505-678-5406	OPTICS
Robert Carnes	WSMR, DYN CORP RADAR	505-477-2211	
Rob Reidel	WSMR, NR-DM	505-678-1875	
John Romeo	CEHND-PM-ED	205-955-5803	PM
Elaine Wales	CEHND-ED-ME	205-955-5322	ELECTRICAL
Scott Millhouse	CEHND-ED-CS	205-955-3246	CIVIL/SITE
Ray Brown	CEHND-ED-CS-A	205-955-4157	ARCHITECT
Fred Wilson	NRO-DA, WSMR	505-679-8144	MET DATA
Moises Pedroza	NR-DT, WSMR	505-678-4820	TELEMETRY
John Tedford	DR-DR, WSMR (RADAR)	505-678-1836	
Steve Donnelly	USASSDC	205-955-1256	
Keith Floren	WSMR-NROBCA	505-678-1425	INSTRUMENTAL
Bill Smith	WSMR-NRO-C	505-678-1433	RANGE CONTROL
Jonathan Williams	USASSOC/TE-O	205-955-1152	PROJECT MANAGER
David Richards	WSMR/COMMO	505-678-5686	
Tom Glenn	BMDO/AQT	703-693-1660	

TEAMS

	TEAM		Objective/Assisgnment
	GPS		
*	Donnelly, Steve		-Goal: Get Coordinates on map
	Bill Smith		
	Bob Reidel		
	ENGINEERING TEAM 2		- Site Layout First Site
*	John Romeo		- Engineering Criteria
	Elaine Wales		
	Scott Millhouse		
	Ray Brown		
	RANGE TEAM 3		-Identify locations for outline range instrumentation
*	Keith Floren		
	John Tedford		-Verify loss and area required
	Bob Carnes		
	Mo Pedruza		
	Pat Hockman		
	Larry Misquez		
	Fred Wilson		
	David Richards	(comm)	
	OPS Team		
*	Paige Johnson		-Coordination
	Rich Martinez		-Guidance
	Mike Krzykowski		-Control
	Jonathan Williams		

Real Property Requirements Site Map

ANNEX I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R/W & ACCESS CONTROL
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MEMORANDUM OF
DATED 10 FE
FORT
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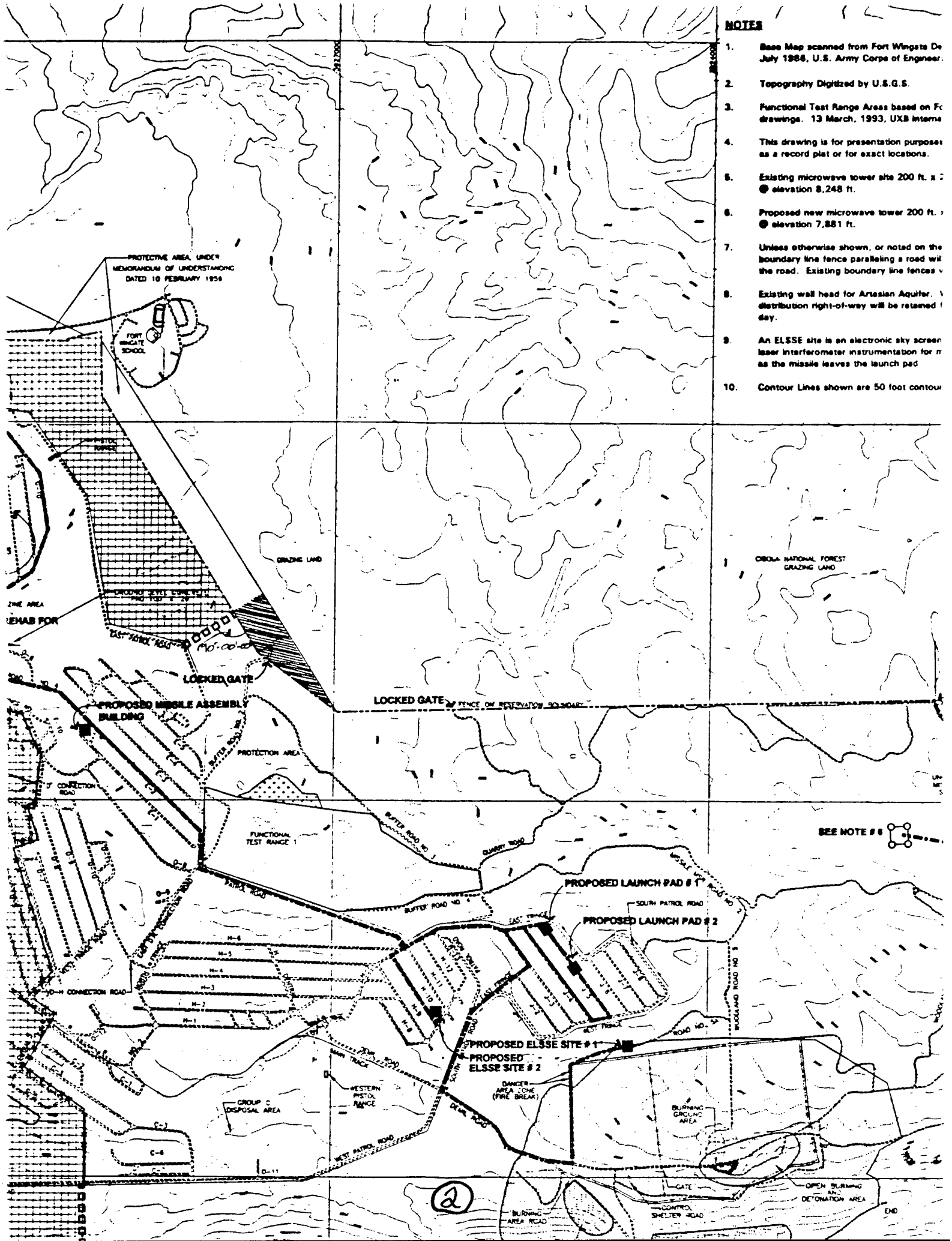
SCHOOL
PROJECTED AREA
FUNCTIONAL
TEST RANGE 2,3
PISTOL
RANGE
PROPOSED
RADAR/OPTICS
SITE #1
MAGAZINE AREA
EXISTING BUILDING REHAB FOR
ACCESS CONTROL
PROPOSED MAIN
ACCESS GATE
200 FT WIDE ROAD "RIGHT OF
WAY" WITH BARBED WIRE FENCE
200 FT. WIDE UTILITY
"RIGHT OF WAY" WITH BARBED
WIRE FENCE
80 FT. WIDE FENCED
"RIGHT OF WAY" TO WELL
HEAD
100 FT. WIDE ROAD
"RIGHT OF WAY" WITH
BARBED WIRE FENCE
LOCKED GATE
GATE
GATE
SEE NOTE
PROPOSED
LAUNCH CONTROL SITE
NO EASTWEST GATES
ROAD CLOSED TO
EASTWEST TRAFFIC
PROPOSED MIS
BUILDING
CONSTRUCTION
ROAD
WELL
WELL
NORTH PATROL ROAD
PROPOSED
RADAR/OPTICS
SITE #2
A-AREA
10-H CONNECTION ROAD
ARCHAEOLOGICAL
SITE
C-4
PROTECTIVE AREA
1


NOTES
1. Base Map scanned from Fort Wingate De
July 1986, U.S. Army Corps of Engineer
2. Topography Digitized by U.S.G.S.
3. Functional Test Range Areas based on Fc
drawings. 13 March, 1993, UXB Interna
4. This drawing is for presentation purposes
as a record plat or for exact locations.
5. Existing microwave tower site 200 ft. x
elevation 8,248 ft.
6. Proposed new microwave tower 200 ft. x
elevation 7,881 ft.
7. Unless otherwise shown, or noted on the
boundary line fence paralleling a road wil
the road. Existing boundary line fences
8. Existing well head for Artesian Aquifer.
distribution right-of-way will be retained
day.
9. An ELSSE site is an electronic sky screen
laser interferometer instrumentation for
as the missile leaves the launch pad
10. Contour Lines shown are 50 foot contour
PROTECTIVE AREA UNDER MEMORANDUM OF UNDERSTANDING DATED 10 FEBRUARY 1956
FORT WINGATE SCHOOL
PISTOL RANGE
GRAZING LAND
CIBOLA NATIONAL FOREST GRAZING LAND
LOCKED GATE
PROPOSED MISSILE ASSEMBLY BUILDING
LOCKED GATE
FENCE ON RESERVATION BOUNDARY
BUFFER ROAD
PROTECTION AREA
FUNCTIONAL TEST RANGE 1
BUFFER ROAD NO. 1
QUARRY ROAD
SEE NOTE # 6
PROPOSED LAUNCH PAD # 1
SOUTH PATROL ROAD
PROPOSED LAUNCH PAD # 2
EAST FENCE
BUFFER ROAD NO. 2
WEST PATROL ROAD
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PROPOSED ELSSE SITE # 1
PROPOSED ELSSE SITE # 2
DANGER AREA ZONE (FIRE BREAK)
WESTERN PISTOL RANGE
GROUP C DISPOSAL AREA
BURNING GROUND AREA
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WEST PATROL ROAD
GATE
CONTROL SHELTER ROAD
OPEN BURNING AND DETONATION AREA
END
BURNING AREA ROAD
2

NOTES

Base Map scanned from Fort Wingate Depot Activity General site map, July 1986, U.S. Army Corps of Engineers

Topography Digitized by U.S.G.S.

Functional Test Range Areas based on Fort Wingate Military Reservation drawings. 13 March, 1993, UXB International, INC. Chantilly, VA.

This drawing is for presentation purposes only and should not be used as a record plat or for exact locations.

Existing microwave tower site 200 ft. x 200 ft. with centroid ● elevation 8,248 ft.

Proposed new microwave tower 200 ft. x 200 ft. with centroid ● elevation 7,881 ft.

Unless otherwise shown, or noted on the drawing, all proposed new boundary line fence paralleling a road will be 50 ft. from centerline of the road. Existing boundary line fences vary.

Existing well head for Artesian Aquifer. Water Rights and a 50 foot wide distribution right-of-way will be retained for 5,000 gallons of water per day.

An ELSSE site is an electronic sky screen equipment that supports laser interferometer instrumentation for measuring missile alignment as the missile leaves the launch pad.

Contour Lines shown are 50 foot contour intervals.

LEGEND

- Real Property to be excessed and not retained as Fee Simple. However, evacuation easements/restrictions will apply to portions of this area.
- BMDO Access Roads
- BMDO Upgraded Roads
- Proposed chain link 3-strand barbed wire fence
- Proposed 5-strand barbed wire fence
- Protected area to be retained
- Approximate extent of UXO surveys at functional test range 1, functional test ranges 2/3 & open burning demolition range
- Old burning/demolition areas
- Additional areas surveyed for UXO
- Demolition area inner fence
- Existing Fort Wingate Depot activity boundary lines
- Existing roads

1500 750 0 1500 3000

Scale in Feet

CIBOLA NATIONAL FOREST GRAZING LAND

ACCESS ROAD FROM STATE HIGHWAY 400

LOCKED GATES

LOCKED GATE

UNUSED MISSILE SITE

SEE NOTE # 6

LOCKED GATES

80 FT. WIDE "RIGHT OF WAY" ON EXISTING ROAD

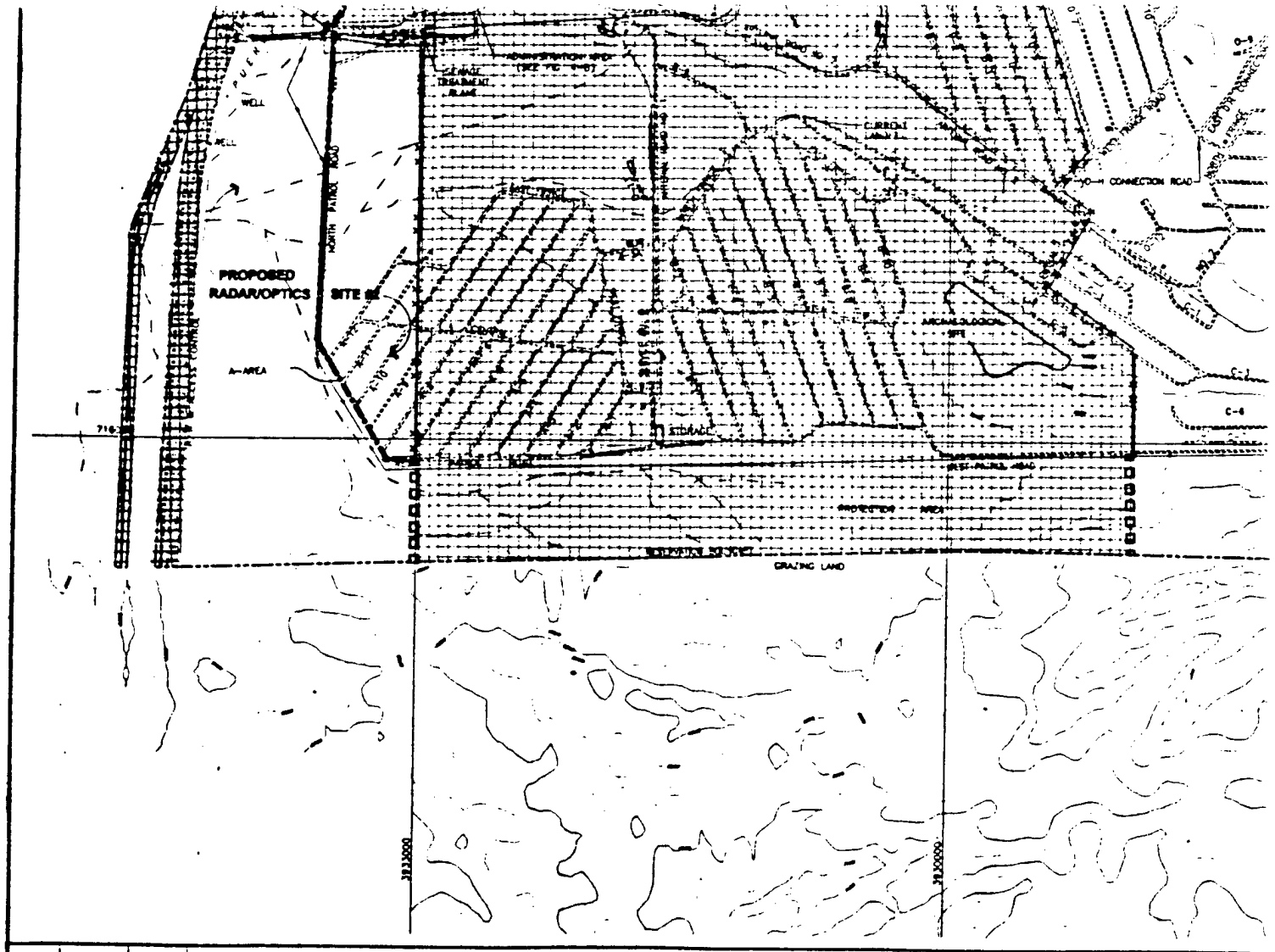
SEE NOTE # 6

LOCKED GATES

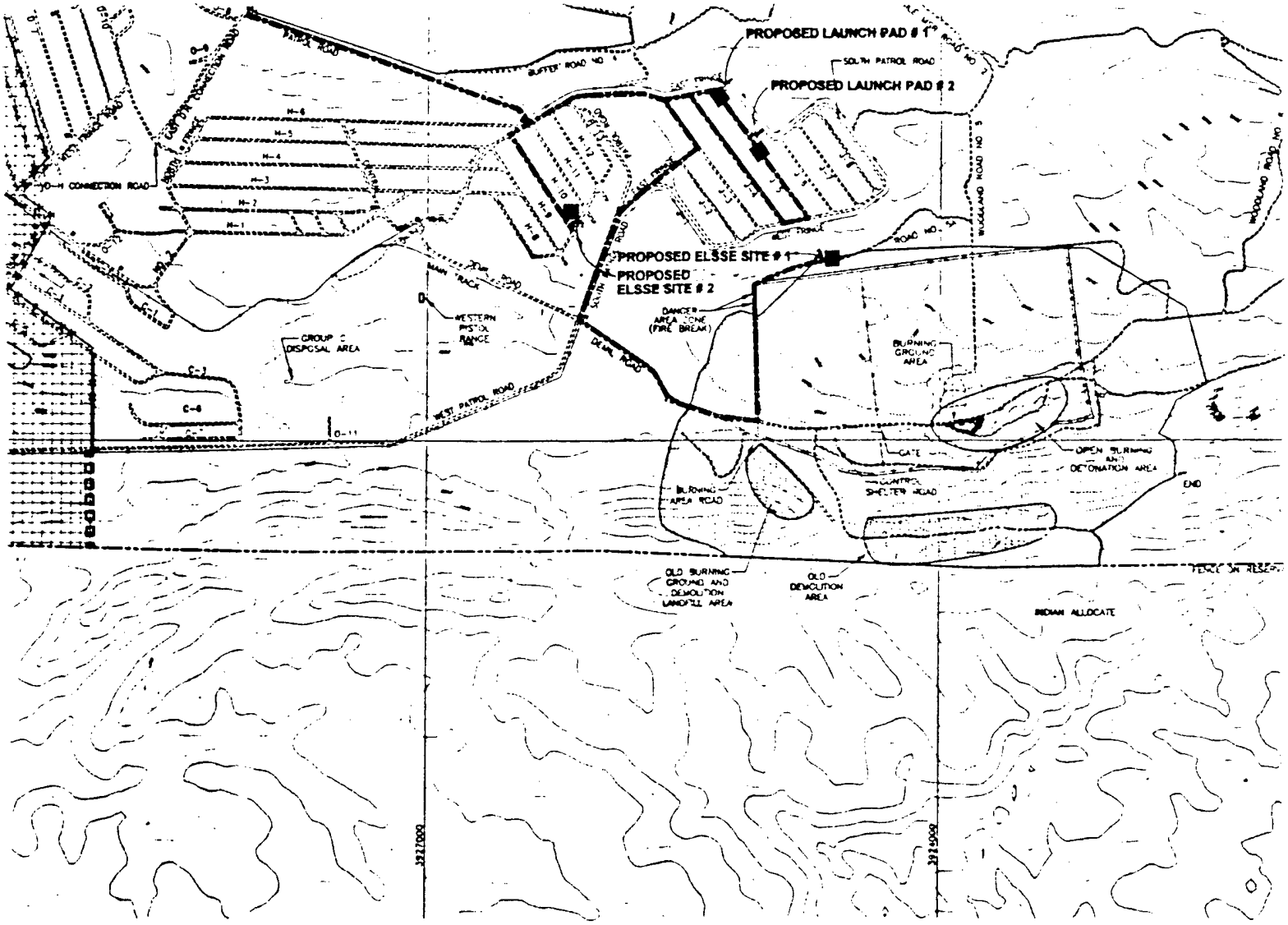
CIBOLA NATIONAL FOREST GRAZING LAND

OPEN BURNING AND DETONATION AREA

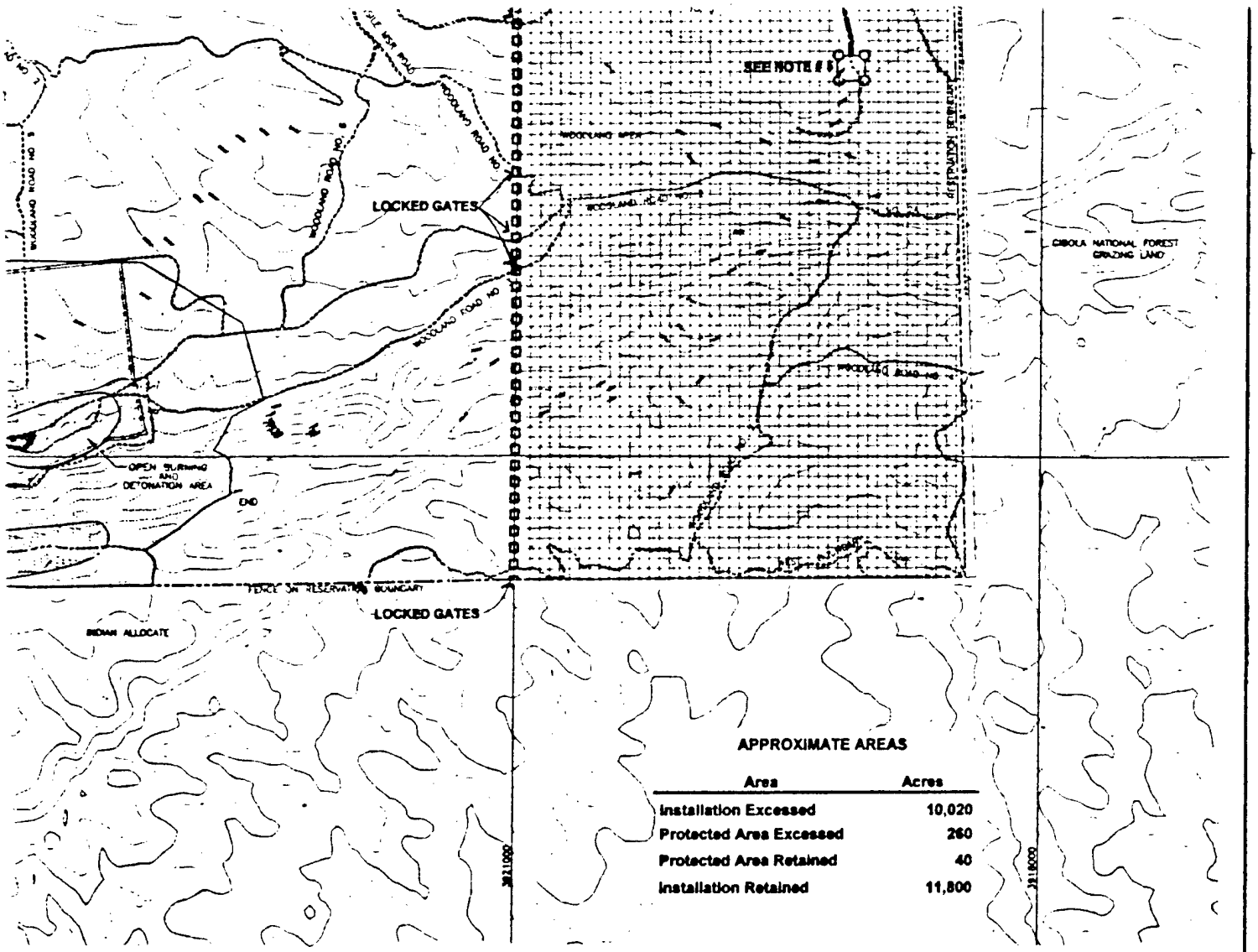
3



NO.	DATE	APPR	REVISION	NO.	DATE	APPR



REVISION	Facility/Location	
	Ballistic Missile Defense Test Launch Complex **Fort Wingate, New Mexico**	**BALLISTIC** ***MISSILE*** ***DEFENSE*** **ORGANIZATION**



APPROXIMATE AREAS

Area	Acres
Installation Excessed	10,020
Protected Area Excessed	260
Protected Area Retained	40
Installation Retained	11,800

ch Complex	BALLISTIC *MISSILE DEFENSE* ORGANIZATION	Approvals	Date	Drawing Title	DRAWING NO. C-1
		Drawn By	3/17/94	Real Property Requirements Site Map	
		Design Engineer	3-17-94		
		AQT Engineer	3-17-94		
		AQT Deputy Director			
		AQT Director			SHEET 1 OF 1

(6)